

# PROGRAM FOR THE ASSA BIENNIAL SYMPOSIUM 2010

<b>Thursday 07-October</b>		
8:00 - 10:00	<b>Registration</b> and Coffee/Tea	
9:00 - 10:00	<b>Guided tour</b> through GeoScience facilities	GeoScience
10:00 - 11:15	<b>Repair status of SALT/Progress at Sutherland:</b> The last 18 months have seen SALT “stood down” while major repairs to its spherical aberration corrector were put in place, a process that completed at the end of August 2010. To understand what has happened, and how we got here, I will briefly review the history of SALT since the Inauguration, focussing on the identification of its two major problems and how they have been investigated, analysed and tackled, almost entirely by SAAO astronomers and engineers. I will also outline major new developments in the other international facilities at Sutherland, which are shifting heavily towards robotic operation, thereby enabling research, especially the search for exo-solar planets, that is impossible through conventional telescope operation.	Prof Phil Charles
11:15 - 12:15	<b>Techniques to observe and analyse celestial objects and phenomena:</b> Astronomy and astrophysics have come a long way in the detection, analyses and cataloguing of celestial objects and phenomena. When Galileo, Messier and other pioneers studied the sky with their state of the art technology, they could detect only a few types of objects such as stars, nebulae and galaxies. As technology improved, new celestial objects were discovered and more refinements in the classification of celestial objects and phenomena became possible. Many fuzzy patches in the sky could now be more clearly observed, identified, catalogued and studied. Today, an extensive list of celestial objects and phenomena is available as a result of improved techniques to detect and analyse these objects through the electromagnetic spectrum. In recent times, other sophisticated observational techniques have also been used such as gravitational microlensing, radial velocity, pulsar timing, etc. Many new types of celestial objects are still being discovered using the different techniques.	Dr Hubrecht Ribbens
12:15 - 12:45	<b>Observatories Museum - An Overview:</b> The planned museum at Boyden about the history of the observatories in Bloemfontein as well as the Roberts archives and all the most important contributors to astronomy in the region will be discussed. The layout, current progress, future plans, the people involved and other relevant information will be shown. A conclusion about the possible impact and the possible events around the opening will also be made.	Hendrik van Heerden
12:45 - 13:45	<b>Lunch</b>	

13:45 - 14:30	<p><b>The dark side of light - Light and spectrum pollution:</b> Light pollution is seen by the general public as an astronomical problem. To fight light pollution effectively we need to change this perception. Our number one enemies are apathy and ignorance. All of us must be involved by informing the public whenever we can. What information do you need to inform sensibly about light pollution? What is light pollution? What are the effects on human health, wildlife and security? When discussing the topic you will eventually be drawn into an argument about safety and security. If you tell some-one that their security lights are causing light pollution the discussion will always end in a fight. You will be given arguments that can be used to maintain good relations.</p>	Johan Smit
14:30 - 15:00	<p><b>Astronomy in Cartoons:</b> Astronomical events and phenomena are frequently depicted in cartoons and cartoon strips in newspapers and magazines. The moon, stars and comets are often seen, as are illustrations of space travel, and cartoons also reflect public perceptions of the sky. The depictions and descriptions are sometimes accurate and sometimes not. This paper takes a further look at examples of these cartoons and analyses the astronomy in them.</p>	Michael Poll
15:00 - 15:15	<p><b>Tea/Coffee</b></p>	
15:15 - 17:00	<p><b>Laser Workshop:</b> Current legislation requires that a person using a laser with an output of more than 5mW be appointed as a 'Laser Safety Officer' by the Department of Health. This requirement is generally ignored and 100mW (and higher) green laser pointers are freely advertised as tools for astronomers. These laser pointers are abused by pointing at aircraft, shining into sportsmen's eyes, etc. The aim of the workshop is to reach agreement within the astronomy fraternity on the use of laser devices and suggest guidelines to the Dept of Health the issuing of permits.</p>	Johan Uys/ (Dept of Health) Andrie van der Linde
18:30 for 19:00	<p><b>Formal dinner</b> at Mohka Restaurant in the Botanical Gardens</p>	

## Friday 08-October

8:00 - 8:30	<b>Arrival/Tea/Coffee</b>	
8:30 - 09:15	<p><b>30 Years of Observing Saturn – light, shadows and seasons:</b> The paper presents observations of Saturn with a small telescope from 1980 until 2010 in order to give an example of what can be done with modest astronomical equipment. It will show what features are visible on the planet and the rings, and how they change as Saturn orbits the Sun. The paper demonstrates how the rings open and close according to the seasons on Saturn, including the last three events (1980, 1995 and 2009), when the rings turned edge-on. Because of the motion of the Earth around the Sun, we are able to see shadows on Saturn. Examples of how the shadows appear to us, and how the shadows change during the course of an Earth year.</p>	Prof Barbara Cunow
09:15 - 10:15	<p><b>Astronomy outreach in a digital age:</b> This paper methods of promoting, informing and educating the general public in astronomy by using digital media. The paper identifies different levels of curiosity and experience and discusses the kind of information that needs to be presented to attract and engage specific audiences. The author draws on his personal experience from running and promoting an astronomy website and engaging in the online astronomy community. He uses these experiences to identify successful and unsuccessful outreach tactics by focusing on similarities and differences in approach by leaders in the field. The strengths and weaknesses of traditional media are compared with digital media. An attempt is made to determine the most appropriate medium for any given audience</p>	Alan Versveld
10:15 - 10:30	<b>Coffee/Tea</b>	
10:30 - 11:30	<p><b>Assessment of the Expected Impact on Observing Conditions at Boyden Observatory of light pollution associated with new developments in the area:</b> This talk describe the contribution to an environmental impact assessment of a proposed housing development at the Maselspoort resort next to Boyden Observatory with emphasis on the possible degrading effect of the proposed development on observing conditions at Boyden Observatory (increased light pollution (sky glow and glare), air pollution and differential heating of the surrounding areas resulting in atmospheric turbulence and poorer seeing conditions). This talk emphasizes the importance of Boyden Observatory, one of only three optical observatories on the continent of Africa, for South African and international astronomy as well as its importance as a public and educational facility. A baseline study of the present level and sources of light pollution and the quality of the night sky at Boyden was undertaken. The most important sources of light pollution were identified. Semi-quantitive conclusions could be reached on the potential increase in light pollution associated with the proposed new development relative to the present level of light pollution. Proposals are made on how to minimize the light, heat and air pollution that may be associated with possible new developments in the area around the observatory</p>	Prof Matie Hoffman

11:30 – 12:30	<b>Evolution of the KAT antennae:</b> A description is given of the structural design, analysis and manufacturing process of the KAT XDM antenna at HartRAO. Thereafter a similar description is given of the structural design, analysis, manufacturing and evaluation process of the KAT-7 antennas at Carnarvon. These two antenna types were both manufactured as a single one piece composite dish structure, but there are large differences between them. The presentation will also point out these differences in the evolution of the KAT antennae, as well as a possible way forward for meerKAT.	H Bauermeister
12:30 – 13:30	<b>Lunch</b>	
13:30 – 14:15	<b>Impact craters and Tswaing:</b> The different types of meteorites and the origin of meteorites are discussed. An introduction to meteorite impact craters are given, their morphology, location on Earth and the presence of impact craters on other solar system bodies are shown. The impact craters in South Africa are discussed. Subsequently the effects of impact craters are discussed and the question: “what are the chances of an impact happening” is raised. Subsequently a number of recent impact events are mentioned and finally, the history and other relevant facts of the Tswaing Impact Crater are provided.	D Barnardo
14:15 – 14:45	<b>SA involvement in utilising space resources:</b> Mining minerals in space (ISRU) might seem like an improbable dream, but there are a number of people dedicated to making this a reality, and South Africa can have a role to play. This presentation looks at some of the mineral resources in space and the most favoured targets are discussed (moon, Mars, asteroids). A model showing the difference between the “closed Earth” vs ISRU mindset is elaborated on as motivation for ISRU. Some of the current activities geared towards realizing ISRU is discussed, with specific focus on this year’s <i>Space Resource Roundtable (SRR)</i> and <i>Planetary and Terrestrial Mining Sciences Symposium (PTMSS)</i> . Finally the role South Africa can play in this industry is discussed.	M Neale
14:45 – 15:00	<b>Tea/Coffee</b>	
15:00 – 15:45	<b>Reporting science:</b> In the modern world it is important that scientists tell the public what it is that they are doing and why. It is therefore essential that both scientists and journalists each know from where they are coming. This talk takes a lighthearted, but serious look at this, responds to both and will hopefully smooth the communication path in future. In SA the problem hinges largely on the lack of science journalists.	Case Rijdsdijk

15:45 - 16:45	<b>Cosmic Masers:</b> In this talk I will explain what masers are, the events leading up to the invention of laboratory masers and the subsequent discovery in interstellar space of naturally occurring masers produced by several types of molecules. The physics of laboratory and astronomical masers is the same, but there are significant differences between the properties of the two types of masers which we understand. The varied range of environments in which astronomical masers are found will be described. Although observations of masers have been used to push back our horizons of ignorance, their use as a diagnostic tool is still limited by our incomplete understanding of how they produce population inversions. Some examples of unexpected behaviour in these cosmic microwave devices will be presented, and theoretical ideas to address the problems will be described.	Prof Derck Smits
16:45 – 17:00	<b>Closing Remarks</b>	Poll/Smit
19:00	<b>Viewing at CBC</b>	

## Saturday 09-October

9:00 - 11:30	<b>A Tour of the Universe (including how the techniques of Radio Astronomy open up windows of observation):</b> Starting with the Solar System, moving on through star birth and death to our Galaxy and the farthest reaches of the Universe, different techniques of observing and measuring the Universe are touched on. The aim is to give an idea of the vastness of the Universe and the many different ways available to us to study our Universe, which can be thought of as the 'biggest science laboratory known to humankind'.	Marion West (HartRAO)
11:30 - 13:00	<b>Travel to Tswaing</b>	Own transport
13:00 - 16:00	<b>Guided tour through Tswaing Crater</b>	Danie Barnardo